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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/589,170	06/08/2000	Ryuji Kohno	192919US2	9759

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EXAMINER

PERILLA, JASON M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 08/13/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/589,170

Applicant(s)

KOHNO ET AL.

Examiner

Jason M Perilla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/8/2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 15-18 is/are allowed.
- 6) ☐ Claim(s) 1-3, 7-9, & 13-14 is/are rejected.
- 7) ☐ Claim(s) 4-6 and 10-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this<sup>3</sup> National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-18 are pending in the application.

#### ***Specification***

2. The disclosure is objected to because of the following informalities:

Page 3, line 2 uses the phrase "as degree as possible". This phrase can not be interpreted properly in the context of the specification.

Page 6, line 25 contains the phrase "at other" where an appropriate interpretation is made to be "at another".

Page 13, line 8 refers to a primary "de"modulator in a transmitter where a reference to a modulator is expected.

Page 13, line 18 makes reference to a signal strength measuring circuit (5) of figure 1 which is shown on figure 1 to be designated as reference (8).

The sentence beginning on page 14, line 18 is of poor usage as it is currently written.

The reference to the estimation means (17) of figure 2 on page 16, line 23 is referred to as (7) on figure 2.

On page 23, line 14 the word "patter" needs correction.

Page 28, line 23 begins a sentence that is not of proper language usage, and should be written more clearly.

Appropriate corrections are required.

#### ***Claim Objections***

3. Claims 5-6 are dependent on claim 4. It appears that they should be dependent on parent claim 1. Claims 5-6 are interpreted to be dependent on claim 1. Appropriate correction is required.
4. Claim 13, line 5; "said output signal" lacks antecedent basis. Claim 13, line 7; "said PLL" lacks antecedent basis. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Ishifuji et al (6061389).

Regarding claim 13, Ishifuji disclosed a received channel estimation method to estimate the receiving channel corresponding a transmission signal used in a plural frequency system (fig. 5, ref. 521, 526, 530-2; col. 10, line 65). The disclosed method of Ishifuji comprises the controlled switching of the frequencies from one channel to another and estimating the appropriate receiving channel based on the received signals during the switching period (fig. 8-10; col. 11, line 13).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 7-9, & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishifuji et al in view of Jokura (5594735).

Regarding claim 1, Ishifuji et al disclosed a receiver that uses plural frequency channels (abstract and specification). A PLL using a differential detection circuit is shown and recited (fig. 3, ref. 104; col. 6, line 50). Ishifuji further teaches a control means for switching one frequency or "terminal" to another frequency or "terminal" of the PLL (fig 5, ref. 531; col 3, line 45). Ishifuji et al also disclosed a method of estimating the receiving channel corresponding to the transmission channel in the period during which the PLL changes from a receiving channel at one terminal to a receiving channel at the other terminal (fig. 8-10; col. 11, line 13). However, Ishifuji fails to teach the use of a frequency divider to obtain a "frequency divided" signal or a "filter means" to output the differential signal voltage. Jokura teaches the use of a frequency divider in a PLL (fig. 2, ref 37; col. 5, line 7) and the use of a loop filter (LPF) (fig. 2, ref.41-2; col. 7, line 3). The use of a frequency divider will facilitate the synchronization of input signals and the use of a loop filter is to integrate the difference of the input signal so as to provide the control signal to the VCO. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the PLL of Ishifuji to have the added benefits of the frequency divider and the loop filter as taught by Jokura.

Regarding claim 2, Ishifuji et al teaches the use of a frequency hopping spread spectrum system (col. 2, line 55).

Regarding to claim 3, Ishifuji et al teaches a control system wherein the frequency of the output signal from the PLL is controllably switched several times from one receiving frequency to another frequency (col. 3, line 37).

Regarding claim 7, Ishifuji et al taught a receiver that uses plural frequency channels, a PLL using a differential detection circuit, a control means for switching the frequency from one "terminal" to another "terminal", and a method of estimating the receiving channel corresponding to the transmission channel in the period during which the PLL sweeps frequencies as presented for claim 1. Additionally, Ishifuji does teach changing the speed or "time constant" at which channels are hopped once a receiving channel has been estimated (col. 3, line 37), but he does not explicitly claim the two separate loop filters with a method to switch the filters or the use of a frequency divider to obtain a "frequency divided" signal. Jokura does teach the use of a frequency divider in a PLL a loop filter as presented in claim 1. Jokura further teaches a second loop filter and both filters being controlled by a switch (fig. 2, ref.40-2; col. 7, line 36). One of these filters has a slower time constant as compared to the other. The purpose of the second loop filter is to provide a means to change the rate at which the output frequency from the PLL is varied and alter the bandwidth of the PLL. Such additions taught by Jokura to be used in a PLL are very relevant and useful to a PLL used in a FH system. Therefore, it would have been obvious to one having ordinary skill in the art at

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the time the invention was made to modify the PLL of Ishifuji to have the added benefits of the frequency divider, and two loop filters as described by Jokura.

Regarding claim 8, Ishifuji et al discloses the use of a frequency hopping spread spectrum system (col. 2, line 55).

Regarding claim 9, Ishifuji et al discloses a control system wherein the frequency of the output signal from the PLL is controllably switched several times from one receiving frequency to another frequency (col. 3, line 37).

Regarding claim 14, Ishifuji discloses a receiving channel estimation method for use in a plural frequency system that comprises the steps of switching the receiving channel from one frequency to another and estimating the receiving channel based on the received signals during the switching period (fig. 8-10; col. 11, line 13). Ishifuji further discloses the change in the speed or "time constant" at which the frequencies are varied when the receiving signal corresponding to the transmission signal is found (col. 3, line 37). Ishifuji does not clearly state the two PLL filters that are used to change the time constant of the PLL. Jokura does describe the use of a loop filter (LPF) (fig. 2, ref.41-2; col. 7, line 3) and a second loop filter both being controlled by a switch (fig. 2, ref.40-2; col. 7, line 36). As one skilled in the art is aware and by the method taught by Jokura, it is obvious that a means to change the speed of changing the frequency channels in a FH system is to change the PLL time constant. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the PLL of Ishifuji to explicitly use the two loop filters and time constant switching circuit of Jokura.

***Allowable Subject Matter***

8. Claims 4-6, 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 15-18 are allowed.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to synchronizing frequency hopping spread spectrum systems.

U.S. Pat. No. 5818885 to Kim

U.S. Pat. No. 6377609 to Brennan, Jr.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (703) 305-0374. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377




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August 6, 2003



**STEPHEN CHIN**  
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